Bonneville Power Administration
Fish and Wildlife Program FY99 Proposal

Section 1. General administrative information

Central Oregon Watershed Enhancement and Outreach

Bonneville project number, if an ongoing project 9040

Business name of agency, institution or organization requesting funding

Oregon State University Extension Service

Business acronym (if appropriate)

Proposal contact person:

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Proposal principal investigator:

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Subcontractors.

Organization	Mailing Address	City, ST Zip	Contact Name

NPPC Program Measure Number(s) which this project addresses.
10.2C.1, 10.8C14, 2.2C.1, 3.3!.1, 6.1D.6, 7.0B.1, 7.0C.3,

7.2D.4, 7.5C.4, 7.5D.3, 7.5E.3, 7.6A.2, 7.6B.1, 7.6B.3, 7.6B.4, 7.6B.5, 7.6B.6, 7.6C.5, 7.7A.4, 7.8A.2, 7.8A.8

NMFS Biological Opinion Number(s) which this project addresses.

Not Applicable

Other planning document references.

Several Watershed Councils have been formed in Central Oregon, Mid-Deschutes, Trout Creek, Willow Creek, Squaw (Wy-Chus) Creek. There are separate Analysis Working Groups made up of key governmental staff involved with Watershed Planning (e.g. ODF&W, SWCD, NRCS, BLM, ODA, ODWR, ODEQ, City of Madras, Crook County, Jefferson County, Lake County, Harney County, OSUES, OSU Experiment Station, Regional Watermasters, Madras High School,....). These entities have requested that Extension Service take the leadership role for outreach educational work.

Subbasin.

Areas include Crook, Jefferson, Harney, and northern Lake Counties. The proposal covers primarily the Deschutes River and it's tributaries.

Short description.

Educate agriculture producers, natural resource managers and area youth about the potential to improve the watersheds. Set up an irrigation scheduling demonstration and a research project on western juniper impacts on watersheds. Develop and disseminate the information.

Section 2. Key words

Mark	Programmatic Categories	Mark	Activities	Mark	Project Types
X	Anadromous fish		Construction		Watershed
+	Resident fish		O & M		Biodiversity/genetics
+	Wildlife		Production		Population dynamics
	Oceans/estuaries	X	Research	+	Ecosystems
	Climate		Monitoring/eval.	+	Flow/survival
	Other	+	Resource mgmt		Fish disease
			Planning/ad		Supplementation

_____	min. Enforcement	_____	
_____		X	Wildlife habitat en-
_____	Acquisitions	_____	enhancement/restoration

Other keywords.

Section 3. Relationships to other Bonneville projects

Project #	Project title/description	Nature of relationship

Section 4. Objectives, tasks and schedules

Objectives and tasks

Obj 1,2,3	Objective	Task a,b,c	Task
1	educate youth & adult	a	conduct training for youth teachers, leaders
		b	field days for youth
		c	camps for youth
		d	awareness tours & presentations adults
		e	workshops for growers on irrigation and on juniper control
2	implement irrigation scheduling for growers	a	assess each growers irrigation system, teach how to use tools provided & crop water use information
		b	set up irrigation scheduling system, phones & internet
		c	run scheduling system, help growers for 2 yrs
		d	end of 2 yrs, survey participants to document changes, write and disseminate results
		e	assess results, work with participants to see if the system can be continued
3	survey, research 3 Juniper control sites	a	survey & analyze plant communities, determine

	established 1982. Develop information gained and disseminate	b	overland flows, summarize data using original surveys as base line develop management implications, publish bulletins, develop series of workshops

Objective schedules and costs

Objective #	Start Date mm/yyyy	End Date mm/yyyy	Cost %
1	10/1998	10/1999	2
2	10/1998	12/2000	27
3	10/1998	12/2000	71

Schedule constraints.

Completion date.

2000

Section 5. Budget

FY99 budget by line item

Item	Note	FY99
Personnel	contract Irr, grad asst Juni	75,685
Fringe benefits	none contract, 10% grad	4,200
Supplies, materials, non-expendable property		27,500
Operations & maintenance		6,425
Capital acquisitions or improvements (e.g. land, buildings, major equip.)	computer, cost shared with ag experiment station 50/50	4,000
PIT tags	# of tags:	
Travel		27,022
Indirect costs	off campus extension 20.3%	34,801
Subcontracts		
Other, Juniper research	grad tuition student labor, includes OPE	17,358 9,240
TOTAL		206,231

Outyear costs

Outyear costs	FY2000	FY01	FY02	FY03
Total budget	139,538			
O&M as % of total	2			

See budget addendum at end of document Total 2 yr budget $345,769

Section 6. Abstract

This proposal is three parts: By localizing and supplementing existing hands on oriented curriculum we would teach school age children about watersheds, problems, and restoration.

Through one on one and workshops we would teach irrigated producers about irrigation scheduling and simple adjustments and repairs thereby improving delivery systems, monitoring water use, saving energy and money, and keeping fertilizer and pesticides out of ground water. With a hands on approach we would implement a pilot irrigation scheduling system for central Oregon.

By capitalizing on existing Juniper Control projects that were established as far back as 1982 we would gain new information and disseminate the same to benefit landowners and agencies with thousands of acres dominated with Juniper. We would use the old surveys as base lines to study the changes in plant communities and impose overland flow measurements during erosion events to add to the knowledge base.
Proven Extension methods of tours, workshops, one on one consultation would be used for the educational efforts.

At the end of two years, students would be more aware of watershed issues and localized curriculum would be in use by teachers, 4-H leaders and others. Also irrigation users would change practices, and the basic program would be in place for a continued irrigation scheduling operation. A wealth of information on the benefits of Juniper Control would be publicized and disseminated to private and public land managers.

Surveys and reports will be completed to document curriculum in place, practices changed, and information disseminated.

Section 7. Project description

a. Technical and/or scientific background. The overall problem should be clearly identified with background history and scientific literature review, if a research project. Location should be specific, if relevant. Goals and

objectives of the 1994 Fish and Wildlife Program (FWP), NMFS Biological Opinion, or other plans in relation to the proposed project should be stated and described in some detail. Indicate whether the project mitigates losses in place, in kind, or if out-of-kind mitigation is being proposed.

Show how the proposed work is a logical component of an overall conceptual framework or model that integrated knowledge of the problem. The most significant previous work history related to the project, including work of key project personnel on any past or current work similar to the proposal, should be reviewed. All work should be adequately referenced and listed at the end of this field.

Type here (provide answers in paragraph form)

The Governor's Oregon Plan, DEQ 303(D) list and Senate Bill 1010, the Coastal Zone Management Act, encourage or require improvements to watersheds to benefit fish and wildlife. None directly address the educational efforts needed to make these a success. Local Watershed Councils and SWCD boards have been asking Extension for help.

This proposal would benefit primarily the Deschutes River watershed and it's tributaries. It encompasses youth education on watershed issues building on materials and programs already in existence and only in need of localization. It includes irrigation scheduling which will improve water use in the area and positively impact water quality and quantity. It also includes surveying plant communities and measuring overland flows from Juniper control projects that were established as far back as 1982. Then publicizing the information. Both the irrigation and juniper components include maximum adult education so management changes will be made for long term impacts on water quality and quantity.

a. Background: EDUCATE YOUTH AND ADULTS: Several watershed councils have been formed in Central Oregon. These councils are composed primarily of landowners, residents, and other non-government people. The government agencies are represented on separate Analysis Working Groups and involved with watershed planning. They include; ODF&W, SWCD, NRCS, USFS, BLM, ODA, ODWR, ODEQ, various cities and the 5 counties and the Confederated Tribes of the Warm Springs.

The Madras High School Forestry instructor, Bill Wysham, has an impressive Willow Creek Watershed Program that was funded by the National Science Foundation with a grant 4 years ago. This program has established 4 monitoring/study sites. All of their data collection has been imputed into a G.I.S. computer software program.

Madras Elementary 4th Grade Teacher, Judy Sweeney, in conducting a "What's in our water project" funded with a grant from the National Geographic Society's "Kid's Network Project". This project provides internet access software, had a scientist assigned to each class via internet, and their data collection and problem solving activities are shared with other classes participating around the world.

The Wetlands Wonder Kit in the Extension offices have been heavily used by the 4-H Clubs and especially the Warm Springs Tribal education programs.

a. Background: IRRIGATION SCHEDULING: In 1991 a small irrigation scheduling program was instituted in Central Oregon. Forty four producers, representing 3,342 acres, surveyed at the end of the season had made significant changes in their management:
68% had adjusted sprinkler set times, 37% had adjusted pressure, 42% had adjusted nozzles, 26% used offsets, 11% installed pressure gauges, 16% adjusted valves to lower demand, 32% used evapotranspiration information, 89% wanted more information.

The average energy savings were 10 -20% with a higher potential. 40% had significant leaks in their system. In addition 25% measured pump overloads and 80% of the systems were being run too long in one place which can leach pesticides and fertilizer. Both Jim Burr and Martin Zimmerman, retired 30+ year Extension Agents, were involved in this project. They would be employed on a contract basis to do the work with irrigators on the new project.

There is a very large irrigation scheduling system operating in the Hermiston-Boardman area of Oregon. This is supported by the large electrical distribution companies and Extension. It has proven to be very beneficial with over 50,000 acres involved.

a. Background: SURVEY,RESEARCH JUNIPER CONTROL SITES: Since 1982, research on the basic ecology and management of western juniper plant communities in central Oregon has added critical information to the body of knowledge available. This work has been an effort between private land owners and Oregon State University Rangeland Resource Department, Agricultural Experiment Station, Extension Offices in Crook and Jefferson Counties and Crook and Jefferson County governments, The Confederated Tribes of Warm Springs Reservation, Crooked River National Grasslands and Regional Strategies. Between 100,000 and 125,000 acres has been treated since 1982 in central Oregon out of the estimated 1 million acres with juniper trees. In addition there are millions of acres in the Pacific Northwest that are dominated by junipers.

Juniper research and demonstration plots have been established at Comes Flat (1982) and Coachman Creek (1996) in Crook County, Camp Creek (1996) in Grant County, Cyrus Butte (1992) and Ashwood (1991) in Jefferson County and Charley Canyon (1992) on the Warm Springs Reservation.

Results of the information gathered from research has been summarized in two publications providing landowners with a better understanding of juniper ecosystems and management of juniper dominated lands: Western Juniper: Its Impact and Management in Oregon Rangelands, EC 1417 (2/93) and Watershed Management Guide for the Interior Northwest, EM 8436 (3/91). Coupled with workshops and consultations a greatly increased awareness and subsequent application of new knowledge has been done. In addition to these popular publications numerous research articles have been published. Great strides have been taken in understanding juniper ecosystems and developing projects on the ground.

b. Proposal objectives. Specific, measurable objectives or outcomes for the project should be presented concisely in a numbered list. Research proposals must concisely state the hypotheses and assumptions necessary to test these. Non-scientific projects must also state their objectives. Clearly identify any products (reports, structures, etc.) that would result from this project. For example, an artificial production program may state the species composition and numbers to be produced, their expected survival rates, and projected benefits to the FWP. A land acquisition proposal may state the conservation objectives and value of the property, the expected benefits to the FWP, and a measurable goal in terms of production. Methods and tasks (in heading e, below) are to be linked to these objectives and outcomes (by number).

Type here (provide answers in paragraph form)

b. Objectives: EDUCATE YOUTH AND ADULTS; Develop a hands on localized Watershed Health and Planning curriculum for Central Oregon Schools and youth. With teachers and leaders already involved with projects implement a watershed education program that will reach most students as they progress through school.

b. Objectives: IRRIGATION SCHEDULING: Convince 185 irrigators in the 5 county area to participate in a irrigation scheduling pilot for 2 years. Show them how to correct deficiencies in their systems. Document improvements made with a survey at the end of the project.

b. Objectives: SURVEY, RESEARCH, JUNIPER CONTROL SITES: Survey three of the six research/demonstration sites of Juniper Control listed above.

Determine the plant community response to treatments that have occurred over time, impose overland flow treatments to determine plant condition versus soil erosion, and develop information for landowners and managers. Disseminate the information through workshops, tours, bulletins and the media.

c. Rationale and significance to Regional Programs. The rationale behind the proposed project should be presented and project objectives and hypotheses related as specifically as possible to the FWP objectives and measures or to other plans. You should make a convincing case for how the proposed work will further goals of the FWP. Relevant projects in progress in the Columbia Basin and elsewhere should be listed and discussed in relation to the proposed project. Arrangements should be identified and documented for cooperation and synergistic relationships among the proposed project, *other project proposals,* and existing projects. Any particularly novel ideas or contributions offered by the proposed project should be highlighted and discussed.

Type here (provide answers in paragraph form)
c. Rational and significance: EDUCATE YOUTH AND ADULTS: The Oregon Plan, 1972 Federal Clean Water Act, and other efforts to improve the survival rates of fish, wildlife, and plants are focusing on Watershed Health and Planning. The BLM, NRCS, USFS have signed an agreement to use Proper Functioning Condition (PFC) to assess the quality of streams for fish and wildlife in the Western U.S.

Most young people and adults have not been exposed to the concept of Watersheds and the many interrelations of natural and manmade activities. The existing hands-on oriented curriculums that are localized and supplemented by area resource agency materials is well tested to improve the watershed knowledge base in American society. Such a curriculum that incorporates PFC taught in the local area would result in a better informed citizenship. This should lead to improved public policy and volunteer citizen actions.

The opportunities for cooperation and education would be greatly enhanced if the Educate Landowners and Agencies on Salmon Stream Restoration Methods proposal is funded by BPA in 1998. Students could help with monitoring and be involved in some of the restoration demonstration/research projects called for in that proposal.

c. Rational and significance: IRRIGATION SCHEDULING: This proposal would primarily impact the Crooked and Deschutes Rivers and their tributaries. The benefits of the program would include more efficient use of water, reduced energy costs, reduced potential of runoff and deep percolation of

fertilizers and pesticides, increase the profitability and sustainability of farms, and put less pressure for water on streams. This project would work together with a similar but very limited proposal for the Squaw (Wy-Chus) Creek watershed through some EQUIP education funds and a GWEB proposal.

In the small 1991 irrigation scheduling project 40% of the systems had significant leaks. In addition 80% of the irrigators under irrigated by over irrigating too infrequently. The average set time for irrigation was 12.7 hours but the time to wet the root zone was only 8.2 hours. This results in substantial leaching past the root zone. Energy savings ranged from 270,000 to 550,000 KWH per system.

A larger irrigation scheduling project such as this would result in substantial energy savings and much less leaching of water. It would improve stream quality and quantity. A large project is much more likely to continue as cooperators see the cost benefit that accrues and establish a permanent system.

c. Rational and significance: SURVEY, RESEARCH, JUNIPER CONTROL: When western juniper dominates a site and significantly occupies a watershed it results in increased volumes and velocities of surface water runoff, accelerated soil loss, and loss of vegetation diversity both in the upper watershed and riparian areas. This affects the quality, quantity and duration of stream water flows in areas dominated by junipers. A threshold in juniper dominance can be crossed after which deterioration of the ecosystem becomes an internal or self feeding process. This threshold is a tension zone between soil and water resource, original plant community, incidence of fire, animal use and degree of juniper dominance. Currently the threshold has been crossed on many thousands of acres and many more thousands are marching toward a self feed process of deterioration. At risk are the water, soil and plant communities within these watersheds which directly affect the health of streams, and their associated populations of fish.

Great strides have been taken in understanding juniper ecosystems and developing projects on the ground as evidenced by the projects listed above and the bulletins and information produced. This knowledge has been useful but additional information is needed to gain a better understanding with a more complete picture. Oregon landowners and managers and resource professionals are continually requesting more guidance and information. The plots established since 1982 hold a potential wealth of information that is critical to understanding succession in plant communities that have occurred over time. This information coupled with additional work on studying

overland flows in storm events will greatly increase land management strategies that will reduce soil movement into streams and enhance proper function of water cycle, mineral and energy cycles. This additional knowledge needs to be delivered in useable forms for land owner and land manager understanding and use.

d. Project history

e. Methods.

e. Methods: EDUCATE YOUTH AND ADULTS: Conduct training Sessions to introduce Jefferson County science teachers, grades 4-8 (including Culver School District, Ashwood School, Jefferson County School District 509J which includes Warm Springs) and volunteer 4-H leaders to the 4-H Watershed Project: Ridges to Rivers, Watershed Explorations, A Project Wet. And to National Geographic Society Kids Network Project, "What's In Our Water" and materials developed by area resource Agencies (e.g. Crooked River National Grasslands, Riparian Team with the U.S. Forest Service, Madras High School Forestry Program).

Conducting one day "Watershed Experience Field Day" for all 7th graders in Jefferson County. The Madras High School advanced forestry students would be trained to be co-instructors with resource professionals.

Watershed education would be featured at the Annual Natural Resources Tour and Experiences co-sponsored by the Jefferson County Schools and O.S.U. Extension Service for Grades 1-3.

Watershed education would be featured at the two Tri-County 4-H Camps and Warm Springs Cultural Camp. Teachers, forestry students, and 4-H leaders trained and resource professionals would be recruited as instructors.

Watershed Awareness Tours would be co-sponsored by Mid-Deschutes Watershed Councils and O.S.U. Extension Service for Council members, teachers and 4-H leaders, Madras High School forestry students, community leaders, and the general public.

Watershed Awareness Presentations would be offered to area service clubs, Chambers of Commerce, Farm Advisory Committees, Farm Bureaus, Board of Commissioners, Livestock Associations, etc.

Budget

1. Upgrade 1 existing Wetland Wonders Kit, purchase 1	$600
2. Ridges to Rivers- curriculum for teachers & volunteers	75
Creek Tables 8	500
Aquifers in a Cup	100
Other equipment & materials for class of 30	550

3. A Project Wet - curriculum for 30 teachers, volunteers		300
equipment and materials		800
4. Watershed Awareness Presentation slides & materials		500
subtotal	$3,425	
5. Watershed Tours transportation, shared 50-50 with Mid-Deschutes Watershed Councils		630
6. Travel for trained instructors to sites		850
subtotal	$1,480	
Total		$4,905

e. Methods: IRRIGATION SCHEDULING: Workshops for irrigators would be held in eight locations (Prineville, Madras, Sisters, Bend, LaPine, Burns, Redmond, and either Fort Rock or Christmas Valley) around Central Oregon to do in-class teaching about the irrigation scheduling program. The workshops would be held in late winter. Martin Zimmerman and Jim Burr, retired OSU Extension Agents, each with over 30 years experience, would lead the workshops.

After these workshops, the program would emphasize single, one-on-one, farm visits, taking one field and one crop at a time in order to look over the whole farm. Jim Burr would lead the effort in this area and be backed up by Martin Zimmerman. Specific information to be determined for the farm irrigation system would include: pump pressure, sprinkler pressure, proper application, time to root zone, set time, leaks, and sprinkler problems. After the farm visit, each producer would be left with a Rainbird pressure gauge and soil sampler and with the knowledge of how to properly utilize each tool.

This hands-on training would be supplemented with the producer being trained in how to utilize the crop water use information that would be available on a daily basis. Martin Zimmerman would be responsible for making the daily crop water use information available. There would be 4 phone lines and five answering machines that producers could call in their respective areas (Prineville, Redmond, Madras, Burns, and Fort Rock, or Christmas Valley). This information would be available, approximately from April 10 to October 15. Producers with internet access could access the crop water use information with their own computer.

At the end of the two-year program, a survey would be mailed to all of the participants to document the changes that have occurred.

Mylen Bohle would be in charge of mailing out the surveys and summarize the surveys, as well as write up the final report, at the end of the project.

	Budget		
Farm visits	farms	cost	total/co.

Crook Co.	50	$135	$6,750		
Deschutes Co.	50	135	6,750		
Jefferson Co.	50	140	7,000		
North Lake Co.	25	185	4,625		
Harney Co.	10	185	1,850		
subtotal				$26,975	
Lodging, per diem N.Lake & Harney			1,500		

Travel for farm visits

Crook Co.	2500 mi.	@ $0.28	$700	
Deschutes Co.	1500	.28	420	
Jefferson Co.	3000	.28	840	
North Lake Co.	3500	.28	980	
Harney Co.	2500	.28	700	
subtotal				$3640

Workshops in 8 locations @ $500		
professional time, mileage, printing	$4,000	
Irrigation booklets, 200 @ $4	800	
Soil samplers with removable tip (model C)		
200 samplers @ $55	11,000	
Rainbird Pressure Gauges with Pitot tube		
200 gauges @ $26	5,200	
Crop Water Use Reporting		
Professional time 24 weeks @ $35/hr	6,710	each yr
Five telephone lines @ $600	3,000	each yr
Five message machines @ $100	500	
Electronic Flow Meter for pivots ($6,000)	-----	
donated service by Central Electric Coop		
Survey at project end and partial computer purchase		
OSU Ag Experiment station fund other half	4,000	
budget yr 1999 $67,325 yr 2000	$9,710	
Indirect Costs 20.3%	13,667	1,971
Total budget	80,992	11,681

e. Methods: SURVEY, RESEARCH, JUNIPER CONTROL SITES: Year 1 ('98-'99) using the original survey as base line, survey and analyze the plant communities on Charley Canyon, Comes Flat and Coachman Creek sites.

Determine overland flows on the 3 sites. Summarize the data.

Year 2 ('99-'00) develop management implications, publish Extension bulletins and develop a series of public workshops.

Budget

Year 1, 3 graduate research assts .5 FTE @ $14,000 =	$42,000	
OPE @ 1%	420	
Services and supplies	10,000	
Mileage and per diem	15,000	
Tuition, 4 terms	19,689	
Student assistants (1200 hrs @ $7/hr + OPE)	8,820	
subtotal year 1	$95,929	
Indirect costs 20.3%	15,477	
Total year 1		$111,406

Year 2, 3 graduate research assts .5 FTE @ $15,000 =			$45,000
OPE @ 1%			450
Services and supplies			18,000
Mileage and per diem			10,000
Tuition, 4 terms			20,862
Student assistants (1000 hrs @ $7.20 + OPE			7,560
subtotal year 2		$101,872	
Indirect costs 20.3%		16,445	
Total Year 2			$118,317
Total 2 year project	$229,723		

f. Facilities and equipment. All major facilities and equipment to be used in the project should be described in sufficient detail to show adequacy for the job. The proposal should indicate whether there are suitable (based on contemporary standards) field equipment, vehicles, laboratory and office space and equipment, life support systems for organisms, and computers, for example. Any special or high-cost equipment to be purchased with project funds should be identified and justified. Reference to other proposals is allowed but note that limitations of those proposals could effect the evaluation of the ones citing them.

Type here (provide answers in paragraph form)

The existing OSU Extension offices and OSU Ag Experiment Station in Central Oregon are well equipped to do this job. Only 1 additional computer needs to be purchased and the cost of that is split with the Ag Experiment Station. There is adequate office space, vehicles, support services in the OSU field offices.

g. References. (Not included in 10-page limit for this section.) Provide complete citations to all publications referred to in Sections 6a-f. List in order: author(s), date, title, report number, publisher or agency, location. References will not be read by reviewers; the substance of any reference should be described in the text and the source cited. Sample citation:

Rondorf, D.W., and K.F. Tiffan. 1997. Identification of the spawning, rearing and migratory requirements of fall chinook salmon in the Columbia River Basin. Annual Report 1995. DOE/BP-21078-5, Bonneville Power Administration, Portland, Oregon.

Type here (provide answers in paragraph form)

Western Juniper: Its Impact and Management in Oregon Rangelands, EC 1417 (2/93)

Watershed Management Guide for the Interior Northwest, EM 8436 (3/91)

Section 8. Relationships to other projects

Indicate how the project complements or includes collaborative efforts with other projects; put the work into the context of other work funded under the FWP. If the proposed project requires or includes collaboration with other agencies, organizations or scientists, or any special permitting to accomplish the work, such arrangements should be fully explained. If the relationship with other proposals is unknown or is in conflict with another project, note this and explain why.

This is not intended to duplicate the Relationships table in Section 3. Instead, it allows for more detailed descriptions of relationships, includes non-interdependent relationships, and includes those not limited to specific Bonneville projects.

Type here (provide answers in paragraph form)

This proposal has the broad support of area Watershed Councils, SWCD boards, all the regional irrigation water managers who helped at their December 19 meeting and the Central Oregon Hay Growers Association, the schools and teachers, 4-H leaders involved, the Warm Springs Tribes, and the private and public landowners, managers, with Juniper dominated lands.

Section 9. Key personnel

Include names, titles, FTE/hours, and one-page resumes for key personnel (i.e. principal investigator, project manager), and describe their duties on the project. Emphasize qualifications for the proposed work. Resumes should include name, degrees earned (with school and date), certification status, current employer, current responsibilities, list of recent previous employment, a paragraph describing expertise, and up to five recent or especially relevant publications or job completions.

Type here (provide answers in paragraph form)

Michael Stoltz, Regional Director, Oregon State University Extension Service, 1 FTE Extension Administration. Until December, 1997, was a 30 year Extension Agent, 7 years in Eugene and 12 years in Pendleton. He has done extensive collaborative research and demonstration with OSU scientists and Extension agents and specialists.
His duties will be as project manager, coordinator, working with the Agents in the field and the fiscal office, oversight on reports and outreach.

William Krueger, Rangeland Resources Dept. Head, OSU, and Extension Rangeland Specialist, 1 FTE. He has 25 years at OSU, teaching, research, and Extension.
He is the principle investigator. He will have oversight on scientific methods, coordination of scientific work and the Rangeland Resource Dept. at OSU.

Extension Agents that will play a key role:
R. C. Hinman, Natural Resource Jefferson County Extension Agent, 34 SE D St, Madras OR 97741, 541/475-3808

Clint Jacks, Extension Staff Chair and Experiment Station Superintendent
34 SE D St, Madras OR 97741, 541/475-3808

Tim DeBoodt, Range Extension Agent, Crook County, 498 SE Lynn Blvd, Prineville OR 97754, 541/447-6228

Mylen Bohle, Central Oregon Extension Forage & Cereal Agent, Crook County, 498 SE Lynn Blvd, Prineville OR 97754, 541/447-6228

Others not listed in the text:
Dr. Lee Eddlemam, Professor, Dept of Rangeland Resources, OSU, Corvallis OR 97331, 541/737-1671

Section 10. Information/technology transfer

How will technology or technical information obtained from the project be distributed or otherwise implemented? Methods can include publication, holding of workshops, incorporation in agency standards or facilities, and commercialization.
Type here (provide answers in paragraph form)

Technology transfer will be through Extension type workshops, tours and meetings supplemented with publications, Agent newsletters to clientele and using the media. Evaluations will be done through surveys and impact statements by Extension and Research personnel.